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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/303,409	05/03/1999	SANDRA FREEDMAN FELDMAN	RD-26.502	8332

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EXAMINER

FERRIS III, FRED O

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 07/21/2003

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/303,409

Applicant(s)

FELDMAN ET AL.

Examiner

Fred Ferris

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 1999.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 and 21 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 9-13, 15, 17-19 and 22 is/are rejected.
- 7) ☒ Claim(s) 6, 8, 14 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-18 have been presented for examination based on applicant's amendment filed on 15 May 2003 (paper #10). Claims 1-5, 7, 9-13, 15, 17-19, and 22 have been rejected. Claims 6, 8, 14, and 16 are objected to. Claims 20 and 21 have been allowed.

Response to Arguments

2. Applicants arguments filed on 15 May 2003 (paper #10) have been fully considered.

Regarding applicant's response to rejections of claims 1-4, 9-12, 17, and 18 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,920,385 issued to Clark et al, in view of U.S. Patent 5,528,368 issued to Lewis et al, in further view of U.S. Patent 5,149,547 issued to Gill: Applicants have argued that prior art does not teach a molding tool with pre-determined topological features for simulating streaking phenomenon. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., pre-determined topological features for simulating streaking) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants further argue that limitations relating to "quality number", "automatic filtering", "quantitative analysis" and "overall data shape and average peak or valley

shift" is not taught in the prior art. The examiner asserts that the specific limitations relating to the "quality number" do not appear in independent claims 1, 9, 17, 19, or 22. Further, both Clark and Lewis automatically apply filtering to image samples and perform an analysis as recited in the previous 103(a) rejection. (Clark: CL15-L40, CL13-L25, Lewis: CL4-L33, CL8-L40) Specific limitations relating to overall data shape and average peak or valley shift are again not recited in the claim language.

Applicants have also argued that certain limitations relating to the claimed invention's features are distinguishable over prior art because "Small fluctuations in chromaticity parameters indistinguishable to the human eye are filtered out by means recited by applicants" and that "Such filtering means includes a multi-linear fit to a series of points across the spectral space domain captured by the spatially-resolved spectrometer". The examiner asserts that applicants have again argued features that are not specifically recited in either the claims or the specification. Applicants appear to be attempting to expand on the "meaning" of the specifications description of the claimed invention by introducing new terms and definitions (i.e. new matter) that is not currently disclosed.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re*

Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it is well known, as cited in the prior art, to use spatially-resolved spectrometer techniques to improve the detection of defects in manufactured materials.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Accordingly, the examiner maintains the 103(a) rejection of claims 1-5, 7, 9-13, 15, 17-19, and 22.

Regarding applicant's response to 103(a) rejection in view of Official Notice:

*Applicants have argued that "is a significant logical leap from the actual teachings of the cited references. The examiner asserts that the features rejected as obvious under official notice simply related to well-known techniques for **filtering by threshold value, data compression, identifying and limiting by minimum and maximum data points** (limiting above/below threshold value), and **signal identification (matching)**. For example, applicants have merely claimed and made reference to the use of data compression in the specification but have not specifically claimed (or disclosed) any data compression technique. Accordingly, the examiner has interpreted the present inventions use of data compression to equivalent to any popular (well-known) data compression technique (i.e. Huffman, run-length, CCITT, etc.). The examiner further reasserts that filtering in data analysis using threshold values, and identifying and*

limiting by maximum and minimum data points in very old and well known in the art and therefor maintains the 103(a) rejection in view of Official Notice. The examiner has also applied a new 103(a) art rejection in view of the textbook titled "The Scientist and Engineer's Guide to Digital Signal Processing", S. W. Smith, California Technical Publishing, ISBN: 0-9660176-7-6, 1997. (Please see new 103(a) rejection below)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-4, 9-12, 17, 18, 18, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,920,385 issued to Clark et al, in view of U.S. Patent 5,528,368 issued to Lewis et al, in further view of U.S. Patent 5,149,547 issued to Gill.

Independent claims 1, 9, and 17, 19 and 22 are drawn to:

A system, method, to **identify defects** in **plastic parts** comprising:

A **molding tool** for **producing plastic parts**

Spatially-resolved **spectrometer** for **obtaining data readings** via reflected light

Computer device for **processing, filtering, analyzing, processing/post-processing**
and **quantifying** data

Regarding independent claims 1, 9, 17, 19, and 22: Clark teaches an electro
optical system for **identifying defects** in manufactured materials including **plastic**
parts. (Abstract, Summary of Invention, CL1-L13, CL2-L3-8, Figs. 3-10)

Clark does not explicitly teach the use of a spatially-resolved spectrometer to
obtain data readings of reflected light.

Lewis teaches the use of a **spatially-resolved spectrometer** and spectroscopic
imaging techniques for collecting **data readings of reflected light** from **material**
samples. Lewis further discloses the use of computer for **analyzing, filtering and**
processing the data readings. (Abstract, Summary of Invention, CL1-L20, 32, 54,
CL2-L41-64, CL40-L52, CL5-L3, 7, 47, 52, CL6-L11, 20, CL8-L38-58, CL10-L23)

Clark further does not teach the use of a **molding tool** for producing plastic parts.

Gill teaches a **molding tool** for producing **plastic parts** comprising a **cavity** and
gate (multiple) where plastic is **extruded** to produce plastic parts. (Abstract, Summary
of Invention, CL2-L26, 43, 57-6, CL7-42, Fig. 2)

It would have been obvious to one having ordinary skill in the art at the time the
claimed invention was made to modify the teachings of Clark relating to an electro
optical system for **identifying defects** in manufactured materials including **plastic**
parts, with the teachings of Lewis relating to the use of a **spatially-resolved**

*spectrometer and spectroscopic imaging techniques for collecting **data readings** of **reflected light** from **material samples**, and to further modify the teaching of Clark with the teachings of Gill relating to a **molding tool** for producing **plastic parts** comprising a **cavity** and **gate** (multiple) where plastic is **extruded** to produce plastic parts, to realize the claimed invention. An obvious motivation exists, since as referenced in prior art, the use of spatially-resolved spectrometer techniques provides improved and reliable detection of defects in manufactured materials.*

*Regarding dependent claims 2-4 and 10-12, and 18: As previously cited, Gill teaches a **molding tool** for producing **plastic parts** comprising a **cavity** and **gate** (multiple) where plastic is **extruded** to produce plastic parts. (Abstract, Summary of Invention, CL2-L26, 43, 57-6, CL7-42, Fig. 2) Further, the **extruded plastic parts** conform to the cavity which obviously can have holes, boss, grill or ribs (any angle) and include flat, positive and negative cavity surface shapes (CL8-L33).*

Claims 5, 7, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,920,385 issued to Clark et al, in view of U.S. Patent 5,528,368 issued to Lewis et al, in further view of U.S. Patent 5,149,547 issued to Gill, and in view of Official Notice.

*Regarding dependent claims 5, 7, 13, and 15: Official Notice is given that this group of claims merely addresses limitations relating to obvious and well known techniques that are commonly used in signal data processing relating to **filtering by threshold value, data compression, identifying and limiting by minimum and***

maximum data points (limiting above/below threshold value), and **signal** identification (**matching**) by shape, width, slope, curve, etc. and, hence, would have been used by one skilled in the art to realize the claimed invention.

Claims 1-5, 7, 9-13, 15, 17-20, and 22 are also rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,541,413 issued to Pearson et al, in view of "The Scientist and Engineer's Guide to Digital Signal Processing", S. W. Smith, California Technical Publishing, ISBN: 0-9660176-7-6, 1997, in further view of U.S. Patent 5,149,547 issued to Gill.

Regarding claims 1-5, 7, 9-13, 15, 17-20, and 22: Pearson discloses an optical filter based surface scanning system for **identifying defects** in manufactured materials (including **plastic parts**) using a **spectrometer** and spectroscopic imaging techniques for collecting **data readings of reflected light** from **material samples**. Pearson further discloses the use of a processor for **analyzing, filtering and processing the sampled data readings**. (Abstract, Summary of Invention, CL3-L55-CL4-L60, CL5-L20-35, CL6-L35-65, CL7-L18-35, CL10-L18-L63, Figs. 1-4, 6)

Person does not explicitly teach a shift calculation in processing the data points.

Smith discloses digital signal processing techniques for sampled data including extracting peak values, determining, setting and extracting thresholds, calculating the mean value, calculating average values, data sampling, extracting/identifying min/max (extreme) points, digital filtering, **moving filter (shifting in processing optimize the filtering task)**, and digital techniques for characterization of spatial resolution.

(Chapters 2, 3, 14, 15 and 25, especially pp. 1-17, 35-39, 59, 261-275, 277-281, Figs. 15-1 – 15-3)

Pearson further does not teach the use of a molding tool for producing plastic parts.

*Gill teaches a **molding tool** for producing **plastic parts** comprising a **cavity** and **gate** (multiple) where plastic is **extruded** to produce plastic parts. (Abstract, Summary of Invention, CL2-L26, 43, 57-6, CL7-42, Fig. 2)*

*It would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pearson relating to an optical filter based surface scanning system for **identifying defects** in manufactured materials (including **plastic parts**) using a **spectrometer** and spectroscopic imaging techniques, with the teachings of Smith relating to well-known digital signal processing techniques including extracting/identifying min/max (extreme) points, digital filtering, moving (shifting) filters, and to further modify the teaching of Pearson with the teachings of Gill relating to a **molding tool** for producing **plastic parts** comprising a **cavity** and **gate** (multiple) where plastic is **extruded** to produce plastic parts, to realize the claimed invention. It would also have been obvious to use data compression on the sampled data since this is a well-known technique for reducing the amount of data to be handled by the processor. An obvious motivation exists, since as referenced in prior art, the use of spatially-resolved spectrometer techniques provides improved and reliable detection of defects in manufactured materials.*

Allowable Subject Matter

4. *Claims 20 and 21 have been allowed over prior art of record.*

*The following is a statement of reasons for allowance: Applicants are disclosing a method and system for identifying defects in molded parts incorporating a molding tool, a spatially-resolved spectrometer obtaining sample points, computerized post-processing, analyzing, filtering, compression, and min/max/threshold processing of data points. This has been disclosed in the prior art. However, applicant's disclosure pertaining to calculating and linearizing a quality number Q from the final iteration filtered data graph where $Q = \ln(M * \sum DL/dx)$ and where $\sum DL/dx$ represents the sum of slopes of final iteration filtered data and M is the linearization number (see specification page 11, lines 1-24, Fig. 5, for example), is deemed novel and non-obvious over prior art of record. This feature as defined in the specification and recited in the independent claims is deemed novel and non-obvious over prior art of record.*

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. *Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).*

*A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, careful consideration should be given prior to applicant's response to this Office Action.

U.S. Patent 6,002,480 issued to Izatt et al teaches the use of spectrometers in material examination.

U.S. Patent 5,220,403 issued to Batchelder et al teaches the use of spectrometers in material examination.

U.S. Patent 6,441,901 issued to McFarland et al teaches the use of spectrometers in material examination.

U.S Patent 5,053,173 issued to Stict teach a molding tool with cavity and gate for extruded plastic parts.

"Thermal desorption behavior of absorbed material on wafer surfaces" T. Jimbo, IEEE 0-7803-3752-2/97, 1997 teaches defect detection using spectrometry.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 703-305-9670 and whose normal working hours are 8:30am to 5:00pm Monday to Friday.

Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 703-305-3900.

The Official Fax Numbers are:

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July 8, 2003


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